

P# K

Ch 29-Worksheet

a) $m_n = 1.008665 \text{ u}$
 $m_u = 235.043924 \text{ u}$
 $m_{\text{Zr}} = 97.9120 \text{ u}$
 $m_{\text{Te}} = 134.9087 \text{ u}$



$$\begin{aligned}\Delta m &= (m_n + m_u) - (m_{\text{Zr}} + m_{\text{Te}} + 3 \cdot m_n) \\ &= (1.008665 \text{ u} + 235.043924 \text{ u}) - \\ &\quad (97.9120 \text{ u} + 134.9087 \text{ u} + 3 \cdot 1.008665 \text{ u})\end{aligned}$$

$$\Delta m = .20589 \text{ u}$$

$$E = \Delta m \cdot c^2$$

$$= (.20589 \text{ u}) \left(\frac{931 \text{ MeV}}{c^2} \right) \cdot c^2$$

$$E = 192 \text{ MeV}$$

b) $m_{\text{Sr}} = 87.905618 \text{ u}$
 $m_{\text{Xe}} = 135.907215 \text{ u}$



$$\begin{aligned}\Delta m &= (m_n + m_u) - (m_{\text{Sr}} + m_{\text{Xe}} + 12 \cdot m_n) \\ &= (1.008665 \text{ u} + 235.043924 \text{ u}) - \\ &\quad (87.905618 \text{ u} + 135.907215 \text{ u} + 12 \cdot 1.008665 \text{ u})\end{aligned}$$

$$\Delta m = .135776 \text{ u}$$

$$E = \Delta m \cdot c^2$$

$$= (.135776 \text{ u}) \left(\frac{931 \text{ MeV}}{c^2} \right) \cdot c^2$$

$$E = 126 \text{ MeV}$$